

**REMARKS**

Claims 1, 4-6, 9-16 and 19-21 are pending in the application.

Claims 1, 2, 4-6, 9-16 and 19 have been rejected.

Claims 1, 5, and 11 have been amended, as set forth herein.

New Claims 22-26 have been added. The support for the new claims can be found throughout the specification. For example, support can be found in Paragraphs [0013] to [0018] of the Applicant's published application. Applicant respectfully submits that no new subject matter is being added and respectfully requests entry of the new claims.

Claims 1, 4-6, 9-16 and 19-21 remain pending in the application.

**I. CLAIMS OBJECTIONS**

Claims 1, 4, 11-16 and 19-21 were objected to because of informalities. By the above amendments, Applicant has amended independent Claims 1 and 11 to correct the informalities and respectfully requests withdrawal of the objections to the claims.

**II. REJECTION UNDER 35 U.S.C. § 103**

Claims 1 and 4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Chiussi (US2003/0142624) in view of Moore (US 2004/0136370) and Dell (US 2002/0085578). The rejection is respectfully traversed.

Claims 5-6 and 9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Chiussi in view of Moore. The rejection is respectfully traversed.

Claim 10 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Chiussi in view of Moore, as applied to claim 9 above, and further in view of Hill (US 2003/0035422). The rejection is respectfully traversed.

Claims 11-16 and 19-21 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Karawai (US 2001/0033581) in view of Chiussi, Moore and Dell. The rejection is respectfully traversed.

In *ex parte* examination of patent applications, the Patent Office bears the burden of establishing a *prima facie* case of obviousness. MPEP § 2142; *In re Fritch*, 972 F.2d 1260, 1262, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992). The initial burden of establishing a *prima facie* basis to deny patentability to a claimed invention is always upon the Patent Office. MPEP § 2142; *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 U.S.P.Q. 785, 788 (Fed. Cir. 1984). Only when a *prima facie* case of obviousness is established does the burden shift to the applicant to produce evidence of nonobviousness. MPEP § 2142; *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Rijckaert*, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). If the Patent Office does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of a patent. *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Grabiak*, 769 F.2d 729, 733, 226 U.S.P.Q. 870, 873 (Fed. Cir. 1985).

A *prima facie* case of obviousness is established when the teachings of the prior art itself suggest the claimed subject matter to a person of ordinary skill in the art. *In re Bell*, 991 F.2d 781, 783, 26 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1993). To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed invention and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. MPEP § 2142. In making a rejection, the examiner is expected to make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), viz., (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; and (3) the level of ordinary skill in the art. In addition to these factual determinations, the examiner must also provide "some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In*

*re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir 2006) (cited with approval in *KSR Int'l v. Teleflex Inc.*, 127 S. Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007)).

Applicant respectfully submits that the combination of cited references fails to teach or suggest all the claim limitations of amended Claim 1. Specifically, Claim 1 has been amended to recite, “wherein the one step comprises a reservation of at least one data switch input and or at least one data switch output, such that no best effort data is sent to the same data switch input as the guaranteed throughput data”. Support for this amendment can be found, for example, in Paragraph [0026] of the Applicant’s published application.

In the Applicant’s disclosure, the guaranteed throughput (GT) control means 6-1 reserves a GT connection, Fig. 2(a) between one of the inputs (I1-I4) and one of the outputs (O1-O4), indicated by an encircled 1 in Fig. 1(a). Any best effort (BE) request from the reserved GT connection input to any output of the data switch is disabled. Accordingly, no BE data is sent to the same data switch input as the GT data as shown in Fig. 2(d). This simplifies the BE scheduling because a smaller amount of inputs have to be taken into account during the BE request phase Fig.2(b).

Fig. 4 of Chiussi shows the scheduler which is included in the communication link interfaces 200. Fig. 4 of Chiussi shows the BE and GB flows going to the same outgoing link, (this link is shown by reference numeral 203 in Fig.2) towards the input of the switch fabric.

Furthermore, Applicant submits that the feature of sending a frame to an outgoing link as suggested by Chiussi is not a reservation of the outgoing link, but rather actual use of the outgoing link.

The Office Action appears to suggest that Chiussi discloses teaching one step of reserving inputs and/or outputs to schedule guaranteed throughput data. However, Chiussi merely describes sending a frame to an outgoing link. Applicant submits that sending a frame to an outgoing link is not the same as a reservation because sending the frame is part of the actual transmission of the frame, and is not part of a precursor reservation operation. By initiating the actual transmission of the frame to a particular output link, there is no need to reserve the corresponding output link because the transmission of the frame has already begun. Thus,

sending a frame to an outgoing link is not a reservation of the outgoing link, but rather actual use of the outgoing link.

Accordingly, Chiussi does not teach or suggest, “wherein the one step comprises a reservation of at least one data switch input and or at least one data switch output, such that no best effort data is sent to the same data switch input as the guaranteed throughput data” as recited in Claim 1.

Claim 1 also recites, “at least one guaranteed throughput input buffer selectively coupled to at least one data switch input by the combined control means.” The Office Action correctly notes that Chiussi and Moore do not disclose this element of Claim 1. The Office Action then attempts to cure this noted deficiency in the teachings of Chiussi and Moore by suggesting that Dell discloses this feature.

On page 3 of the Office Action, the Examiner refers to the circled “S” in Fig. 10 of Dell as a “selector”. Applicant submits that nowhere in Dell does it refer to the circled “S” as a selector. To the contrary, Paragraph [0107] of Dell refers to a “scheduler” in the input and output devices with respect to Fig. 10. In Fig.10 of Dell, the four FIFO (First In First Out) queues are all coupled to the scheduler. In Dell, once the scheduler considers a cell as eligible for service and the routing queue can be served, a bid is sent to one of the crossbar devices (Paragraph [0107]). If the bid is accepted, a valid grant signal is sent back to the input device and cell is sent to the crossbar device. Therefore the scheduler schedules the bids based on each received cells eligibility for service, whereby the cells are received from each of the four FIFO queues.

Accordingly, Dell does not teach or suggest “at least one guaranteed throughput input buffer selectively coupled to at least one data switch input by the combined control means” as recited in Claim 1.

Claim 1 further recites, “at least one guaranteed throughput input buffer is configured to store only one unit of guaranteed throughput data at a time.” Applicant is unable to find any teaching or suggestion that the routing queues of Dell store only one unit of guaranteed throughput data at a time as recited in Claim 1.

To the contrary, the use of the term “FIFO queue” indicates the ability to store multiple packets. In general, a “FIFO queue” indicates a data structure to store a sequence of data units (e.g., packets) which operates on the principle of what comes in first is handled first, what comes in next waits until the first is finished. Hence, the terminology used to describe the routing queues of Dell is also descriptive of the ability of each queue to store multiple data units, and the Office Action has not established a teaching otherwise.

The Office Action suggests on page 6 that the flow queues 502 of Chiussi store only one unit of guaranteed throughput data at a time. However, Applicant respectfully submits that Chiussi does not teach a guaranteed throughput input buffer to store only one unit of guaranteed throughput data at a time. Chiussi merely teaches storing received packets for each guaranteed bandwidth flow 402 in one of the flow queues 502. While the Office Action appears to interpret this to mean that each flow queue 502 only carries one guaranteed bandwidth flow, Applicant is unable to find any teaching or suggestion in Chiussi that the flow queues 502 store only one flow at a time. Furthermore, even if one were to assume that each 3 flow queue 502 only carries one guaranteed bandwidth flow (which Applicant disputes), the guaranteed bandwidth flow includes more than one unit of guaranteed bandwidth data. Therefore, the flow queues 502 store multiple units (e.g., packets) of guaranteed bandwidth data at a time in order to accommodate the guaranteed bandwidth flow 402.

In addition to the above, Applicant submits that the Office Action has failed to establish a reasonable expectation of success for combining the window-based flow mechanisms of Moore with the switching device of Chiussi in that no attempt has been made to explain how the proposed combination might be implemented or achieved.

The Office Action correctly notes on page 6 that Chiussi does not disclose a guaranteed throughput scheduling that is contention free as recited in Claim 1. The Office Action attempts to cure this deficiency in the teaching of Chiussi by suggesting that Moore discloses guaranteed throughput scheduling that is contention free. However, the system described by Moore has many key requirements to be able to provide contention free guaranteed throughput scheduling, i.e., flows having reserved appointments at each outbound router/switch (Paragraph [0038]),

routers in the network that can guarantee specific flow rates for Layer 3 traffic (Paragraph [0046]), properly setting congestion window maximum size values (Paragraph [0047]), and a defined criteria for packet classification (Paragraph [0048]). There are no teachings in Moore that teach or suggest how the key requirements of the system, which are implemented using a complex apparatus, could be implemented on the simple scheduling apparatus described in Chiussi.

Furthermore, the Office Action does not attempt to explain how the proposed combination might be implemented or achieved. Moore does not disclose how its window-based method of providing contention free guaranteed throughput scheduling could be applied to the weighted-round robin (WRR) schedulers described in Chiussi. Page 3 of the Advisory Action dated 01/13/2009 suggests that “Moore also teaches the scheduling method based on WRR scheduling (see paragraph [0003] and [0005])”. Applicant respectfully disagrees with this interpretation of Moore.

Moore gives an overview of TCP in these cited paragraphs, and discloses the flow control mechanism. Paragraph 0003 of Moore states, “a network user cannot specify a particular provisioning of the link bandwidth among the different flows because TCP automatically provisions an equal amount (a fair share) of the link bandwidth among all the flows.” This can be implemented using many algorithms, one example being Weighted Fair Queuing (WFQ). Moore states in paragraph [0007] that “the term TCP will be used to refer to any transport protocol using window based flow control”. Therefore, Applicant submits that Moore does not specify that the scheduling method used is based on WRR scheduling.

In the absence of some specific teaching in Moore to indicate how its method of providing contention free guaranteed throughput scheduling could be applied to the apparatus described in Chiussi, the teachings of Moore are inadequate to support the assertion in the Office Action.

As noted on page 6 of the Office Action, Moore discloses a system for per flow guaranteed throughput. The system of Moore is directed to using network protocols that have window based flow control mechanisms. (Moore, Paragraph [0001].) There are no teachings in

Chiussi that indicate that the network protocols used have window-based flow control mechanisms. Therefore, the Office Action does not satisfy the burden to show a reasonable expectation of success for the proposed combination because the Office Action attempts to combine the window-based flow mechanisms with the switching device of Chiussi, without attempting to explain how the proposed combination might be implemented or achieved.

Accordingly, Applicant respectfully submits that Claim 1 is patentable over the cited references.

Independent Claims 5 and 11 recite limitations analogous to the novel limitations emphasized above in traversing the rejection of Claim 1 and, therefore, also are patentable over the cited references. Additionally, Claims 2 and 4, Claims 6, 9 and 10, and Claims 12-16 and 19 depend from Claims 1, 5 and 11, respectively, and include all the limitations of their respective base claims. As such, Claims 2, 4, 6, 9, 10, 12-16 and 19 also are patentable over the cited references.

Accordingly, Applicant respectfully requests withdrawal of the § 103 rejection of Claims 1, 2, 4-6, 9-16 and 19.

### **III. CONCLUSION**

As a result of the foregoing, Applicant asserts that the remaining Claims in the Application are in condition for allowance, and respectfully requests an early allowance of such Claims.

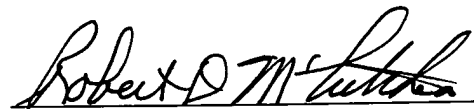
If any issues arise, or if the Examiner has any suggestions for expediting allowance of this Application, the Applicant respectfully invites the Examiner to contact the undersigned at the telephone number indicated below or at *rmccutcheon@munckcarter.com*.

The Commissioner is hereby authorized to charge any additional fees connected with this communication or credit any overpayment to Deposit Account No. 50-0208.

Respectfully submitted,

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